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Issued October 29, 1912.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF STATISTICS—BULLETIN 100.
VICTOR H. OLMSTED, Chief of Bureau.

RAILROADS AND FARMING.

SOME INFLUENCES AFFECTING THE PROGRESS OF AGRICULTURE.

BY

FRANK ANDREWS,
ASSISTANT CHIEF OF THE DIVISION OF PRODUCTION
AND DISTRIBUTION.



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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF STATISTICS,
Washington, D. C., July 15, 1912.

SIR: I have the honor to transmit herewith a report on the efforts made by railroad companies to increase the number of farmers along their lines and to improve methods of agriculture. The report was prepared by Frank Andrews, statistical scientist and Assistant Chief of the Division of Production and Distribution of this bureau. The information contained in the report was gathered wholly through personal interviews and correspondence with persons engaged in the work in question, and from publications of the Interstate Commerce Commission and the Bureau of the Census.

On account of the exhaustive efforts made to collect information and the liberality of the railroad companies in supplying it, this bulletin embraces a very comprehensive statement of the subject, except in regard to educational efforts of the railroad companies, which are treated in Circular 112 of the Office of Experiment Stations.

It is respectfully recommended that this report be published as Bulletin 100 of this bureau.

Very respectfully,

VICTOR H. OLMSTED,
Chief of Bureau.

HON. JAMES WILSON,
Secretary of Agriculture.

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RAILROADS AND FARMING.

INTRODUCTION.

IMPORTANCE OF AGRICULTURAL PROGRESS.

Improvement of agriculture is a matter of public importance in a country like the United States, which depends for a large part of its annual production of wealth on the product of the farm. The large sums expended by the Federal and State governments for agricultural experiments and for spreading abroad information as to methods of farming are not to be regarded as contributions for the relief of a needy class of people, but rather for the further development of one of the most important industries of the Nation. That these appropriations rest upon a sound economic basis is indicated by the voluntary efforts that are put forth for the development of agriculture by individuals and corporations engaged in nonagricultural occupations. It is natural, of course, for manufacturers of farm implements, machinery, and fertilizers, for nurserymen and seedmen, to offer instruction to farmers through the medium of literature and actual demonstrations; for by this means not only are the wares of the publishers advertised, but the successful application of the suggestions thus offered tends to increase the prosperity of the customers, and thus indirectly increases the trade of the persons or firms issuing the literature or conducting the demonstrations.

Another form of aid to agriculture by persons in other occupations is illustrated in the development associations whose members consist of individuals, firms, and corporations engaged in various lines of business. The primary object of these associations is usually to bring in new settlers, especially settlers who will become farmers. Among the members of such an association may be found lumber companies, railroad and steamship companies, insurance agents, seed growers, wholesale grocers, bankers, wholesale and retail merchants, printers, brewers, and manufacturers of various articles. In connection with soliciting new settlers these associations do more or less work in diffusing literature relating to methods of farming.

Within the past year there has been considerable activity on the part of the banks in the promotion of agriculture. Bankers' associations in various States have taken steps toward bringing about

larger yields and better methods of farming; and the American Bankers' Association itself has recently appointed a "committee on agricultural and financial development and education."

MOTIVES OF RAILROAD COMPANIES.

The most prominent of all classes of occupations which have aided agriculture is that of transportation. The railroad companies are now making, and for a number of years have made, special efforts, apart from their strictly transportation business, to promote agriculture. There have been at least two strong motives for the railroad companies to do this. One motive has been and is the large percentage of the revenue which is due to the farm. During the year ending June 30, 1910, the revenue from four classes of farm products, grain, hay, cotton, and live stock, amounted to \$97,000,000 on those roads for which reports on this subject were made to the Interstate Commerce Commission; they operated more than one-half the mileage of the United States, and carried about one-half of the total tonnage. With the data for these companies as a basis, it is estimated that 10 per cent of the total freight revenue of the railroads of the United States was derived from carrying grain, hay, cotton, and live stock.

This percentage represents a little more than one-half of the total farm produce carried by rail. If the other half, for which no revenue statistics are now available, yielded the same rate of return, the total amount received by the railroads of the United States during the year ending June 30, 1910, for carrying products of the farm would equal 20 per cent of the total freight revenue.

A second reason why railroad companies have been willing to spend money to encourage agriculture has been the fact that they had for sale large areas of land. The first land grant made by Congress was in 1850, and was made for the benefit of the Illinois Central Railroad. This land was originally granted by Congress to the State of Illinois and by the State to the railroad company. Through this grant the company gained title to 2,595,053 acres. In the same year similar grants were made by Congress to the States of Mississippi and Alabama for the benefit of the Mobile & Ohio Railroad. The total area granted in these States amounted to 1,156,659 acres. Other grants followed rapidly in the same manner, Congress giving to a State land which was to be in turn ceded by the State to a railroad company. Later grants were made by the United States Government direct to railroad companies. One of the first was made in 1862 to the Union Pacific Railroad. The total area of public land granted by acts of Congress for railroad purposes up to June 30, 1911, was 115,500,000 acres, which is equal to more than the total land area of the seven Atlantic States from New York to Virginia, inclusive. One railroad

was granted 33,300,000 acres. Another company had received 19,100,000 acres up to the date just mentioned.

LAND GRANTS.

More than 60 years have elapsed since the first grant, and during that time railroad companies have been vitally interested in increasing the number of farmers on the lands along their lines. One of the first departments organized in some of the western railroad companies was the land department, which had charge of selling the company's lands to individuals.

While a large area is still owned by railroad companies west of the Mississippi, it is not advertised as farming land to a great extent, at least not nearly so much as the same companies through their immigration departments advertise farming lands, owned by others, and offered for sale, in the regions traversed by the railroad. The efforts of the railroads to settle their respective territory are now directed chiefly to lands other than those owned by the railroad companies. However, some railroad agricultural land is still on the market, and the sales mentioned below may include some new farms.

One railroad company reported for the year ending June 30, 1909, the sale of 184,069 acres at an average price of \$2.17 an acre. Another company for the same year reported the sale of 349,961 acres. Still another reported for that year 80,464 acres at an average price of \$3.75 an acre. All three of these companies had considerable areas still unsold, a large part of which is reported as not suited to farming.

Another important source of supply of farm land to which new settlers were invited was the land subject to "homestead entry," the undeveloped lands offered by the United States to persons who would take them as homes. Up to June 30, 1911, the conditions of entry had been fulfilled and final title received to 123,500,000 acres, which had been granted under the homestead act during the 43 years since it was passed. The area to which title was acquired during the year ending June 30, 1911, amounted to 7,700,000 acres.

From soliciting agricultural settlers it is a natural sequence to offer them advice and cooperation; and in some railroad companies the agricultural education department and the immigration department are united. The educational work, however, is newer, having come into vogue largely within the past decade.

On account of the great extent of the agricultural promotion work of the railroads in soliciting new settlers and in encouraging the use of better farming methods, the influence of railroad companies plays an important part in the present-day movement for better farming. The summary which is contained in this bulletin is designed to give a description, more of the economic than of the technical agricultural features of this development work. The descriptions are not in-

tended to represent the railroad companies as philanthropists. The work is carried on, the companies themselves assert, as a business proposition. The more farmers along a road the more the tonnage; their products are to be hauled away and their supplies brought to them. Freight traffic is increased through better methods of agriculture. Passenger traffic also derives a benefit from increases in population.

GENERAL CLASSES OF AGRICULTURAL DEVELOPMENT WORK.

Most of the lines of work undertaken by railroad companies for the promotion of agriculture may be divided into two general classes. The first of these classes consists of efforts to increase the number of farmers in the regions along the railroads concerned; while the second class of work may be called educational and looks to an increase in the production of farms already established.

One or both of these two kinds of work are usually undertaken by any railroad company making special efforts to promote agriculture, and for this reason these two classes of activities are the only ones considered in Tables 1 to 4, on pages 13 to 18, inclusive. Such projects as those relating to the increase of available farm lands, the supply of farm labor, and the establishment or improvement of markets and marketing systems, are offered by railroads, which also engage either in "immigration" or agricultural education work, or in both. Hence a list of companies engaged in these minor activities would contain no companies in addition to the ones represented in the tables just mentioned.

EXTENT OF AGRICULTURAL PROMOTION WORK.

BASIS OF COMPARISON.

A satisfactory way to measure the relative extent of the agricultural promotion work of different railroads is in many cases hard, if not impracticable, to determine. The agricultural instruction trains of one railroad may reach more persons than do those of a second railroad, but the experimental plots of the second may outnumber the plots of the first company, and so on through the list of agricultural promotion projects. A common measure for all kinds of projects is not practicable. When two or more railroad companies have active agricultural departments, each engaged in a variety of projects, it is hard, if not impossible, to determine which company is making the greatest efforts.

Likewise a definite comparison is impracticable when one railroad's agricultural promotion work consists of publishing and distributing a single pamphlet on agriculture, while another road publishes a number of such pamphlets, operates numerous instruction trains,

and has an organized corps of experts to supervise experiments and give advice to farmers. If, for instance, the efforts of the less active company be represented by the numeral 1, there is no means of determining what numeral would represent correctly the extent of the efforts of the larger road.

Measurement of results of the work of various railroads is also impracticable. A given improvement in the agriculture of a community may be due to the combined influence of a number of conditions.

Federal and State agricultural experts, farm journals, books, and discussions at farmers meetings, as well as the railroads' efforts, may all contribute to a certain step in agricultural progress, for which no one influence deserves the entire credit.

In want of a more satisfactory way to compare the relative importance of efforts or results of various railroads, the bases used in Tables 1 to 4, inclusive, were taken.

In Table 1 the mileage operated by all railroads is compared with that operated by those making any special efforts at all in either of the two chief lines of work covered by the table. On this basis the road doing much work counts just as much, in proportion to mileage, as the road doing very little agricultural promotion work.

The importance of this apparent defect in the table is lessened by the fact that each territorial division, shown in Table 1, includes some roads that are doing much work and some that are doing but little. Hence, for purposes of a rough comparison, it may be assumed that each territorial group represented in the table has about the same proportion of roads that are doing much and of roads that are doing little in their organized efforts to improve farming.

The same assumption may be made in comparing one geographic division of States with another, in Tables 2, 3, and 4.

Taken at their least significance, these four tables show to what extent a beginning, if nothing more, has been made in some line of railroad agricultural promotion work.

MILEAGE OPERATED.

More than three-fourths of the mileage of the railroads in the United States is operated by companies which, in the year ending June 30, 1912, were making organized efforts to promote agriculture. The companies working to secure new agricultural settlers along their lines operated nearly 62 per cent of the railroad mileage of the country, while those companies which engaged in promoting agricultural education operated about 70 per cent. In spite of the thorough inquiry made in preparing this bulletin, data for some railroads may have been omitted from the totals upon which these percentages were computed. The inclusion of such data would, of

course, increase the figures upon which the percentages depend, but it is not at all probable that any material increases would be made in the percentages as given above and in Table 1.

To compare one part of the United States with another, as to the mileage operated, the territorial groups as defined by the Interstate Commerce Commission have been taken as a basis. The boundaries of these 10 groups are shown in figure 1, below, and described in note 2, page 13.

It will be noted in Table 1 that in Group III 58.2 per cent of the total mileage of railroads was operated by companies engaged in some form of agricultural promotion, while in Group VIII the percentage was 88.9. Between these two extremes are the percentages for each of the other eight groups.



FIG. 1.—Map showing territorial groups of railroads.

Educational work was conducted in practically all parts of the United States, more than one-half of the mileage of each territorial group was operated by companies making special efforts to introduce better methods in farming. The smallest percentage of mileage involved in agricultural education was in Group III, including the region extending from western New York and Pennsylvania to the eastern boundary of Illinois, and from the Ohio River to the Straits of Mackinac. But even in this region the railroads engaged in agricultural education operated more than 15,000 miles of line, or over 58 per cent of the total mileage for that territorial group. The highest percentage in this comparison is for Group VIII, which comprises Kansas, Oklahoma, Arkansas, and parts of Missouri and Colorado.

For "immigration" work, consisting in efforts to bring more farmers into territory served by the roads doing the work, the percentages of mileage ranged from 7 to 89 per cent. The low figure refers to Group II, including nearly all the area of the Middle Atlantic States from New York to Maryland, inclusive; while the highest percentage applies to Group VII, which consists of Nebraska, Wyoming, Montana, and parts of North and South Dakota.

The figures for mileage, as will be noted in note 1, Table 1, refer to June 30, 1910, while the classification of railroads in that table depends upon promotion work that was reported to be in progress in the 12 months ending June 30, 1912. As the mileage is subject to relatively slight changes from year to year, the data in this table may be taken to refer to conditions existing in 1911-12.

TABLE 1.—*Mileage operated by railroads making organized efforts to promote agriculture.*¹

Group. ²	Total miles operated.	Miles operated by railroads making organized efforts to—					
		Increase the number of farmers.		Promote agricultural education.		Increase the number of farmers or promote agricultural education.	
		Miles.	Per cent of total.	Miles.	Per cent of total.	Miles.	Per cent of total.
I.....	8,240	5,655	68.6	6,906	83.8	6,906	83.8
II.....	24,521	1,733	7.1	16,947	69.1	16,947	69.1
III.....	26,624	6,997	26.3	15,490	58.2	15,490	58.2
IV.....	15,221	10,746	70.6	10,965	72.0	10,965	72.0
V.....	30,076	23,664	78.7	22,857	76.0	23,838	79.3
VI.....	52,379	32,080	61.2	30,398	58.0	41,572	79.4
VII.....	14,099	12,525	88.8	11,466	81.3	12,525	88.8
VIII.....	34,653	29,403	84.8	30,440	87.8	30,805	88.9
IX.....	19,405	14,067	72.5	11,615	59.9	14,766	76.1
X.....	24,774	17,634	71.2	17,072	68.9	17,634	71.2
United States.....	249,992	154,504	61.8	174,156	69.7	191,448	76.6

¹ Compiled from reports of the Interstate Commerce Commission on Statistics of Railways in the United States. Figures refer to June 30, 1910, and railroads are classified according to the agricultural promotion work that was reported to be in progress in the year ending June 30, 1912.

² Group I comprises the railroads of the New England States; Group II New York (east of Buffalo), Pennsylvania (east of Pittsburgh), New Jersey, Delaware, Maryland, and northern part of West Virginia; Group III New York (west of Buffalo), Pennsylvania (west of Pittsburgh), Ohio, Indiana, and the southern peninsula of Michigan; Group IV Virginia, central and southern West Virginia, North Carolina, and South Carolina; Group V, Kentucky, Tennessee, Georgia, Florida, Alabama, Mississippi, and Louisiana (east of the Mississippi River); Group VI, northern peninsula of Michigan, Wisconsin, Illinois, Minnesota, Iowa, Missouri (north of the Missouri River), North Dakota (east of the Missouri River), and South Dakota (east of the Missouri River); Group VII, North Dakota (west of the Missouri River), South Dakota (west of the Missouri River), Nebraska, Montana, Wyoming, and northern Colorado; Group VIII, Missouri (south of Missouri River), Arkansas, Kansas, Oklahoma, central and southern Colorado, northeastern New Mexico, and the "Panhandle" of Texas; Group IX, Texas (except the "Panhandle") and southeastern New Mexico; Group X, Idaho, Utah, Nevada, western New Mexico, Arizona, Oregon, Washington, and California. See fig. 1, p. 12.

TOTAL LAND AREA AFFECTED.

An attempt to measure the extent of railroad promotion work in agriculture is made also in Tables 2, 3, and 4. In these tables statistics for individual counties form the basis. A county through which runs a railroad engaged in organized efforts for agricultural promotion may be regarded for the purpose of this comparison as

subject to the influence of such efforts. In many such counties two, three, or more railroads were engaged in the work under discussion. In some instances, more especially those of agricultural settlement work, the efforts of the railroads were not directed to all counties along their respective lines. For instance, a railroad extending 1,000 miles or more might confine its efforts for agricultural settlement to newer localities, paying but little attention to the older and more established farming sections, where farm values are high.

In some geographic divisions, notably west of the Missouri River and in the South Central States, the settlement, or "immigration" work, extended into most all the counties reached by the railroads which were doing such work. In the North Atlantic division, the



FIG. 2.—Map showing geographic divisions of States.

North Central east of the Mississippi River, and, as has been noted, in a considerable part of the North Central division west of the Mississippi River, only certain sections are subject to the efforts to increase the farming population. But it is also to be noted that the "immigration" efforts of railroads are being rapidly extended to include many of the older agricultural regions. A large part of the New England States and the State of New York, parts of Maryland, and a large number of counties in the State of Michigan are advertised by railroads and by organizations aided by railroads, for the purpose of bringing in more farmers.

With agricultural education work, on the other hand, the activity of a road is apt to be more generally distributed and to include practically every county on the line.

The 155,000 miles operated by companies making organized efforts to bring more farmers to their territory are located in counties whose land area is 1,585,000,000 acres, or 83 per cent of the total land area of continental United States, and the 174,000 miles concerned in the promotion of agricultural education serve counties whose total land area equals 1,643,000,000 acres, or 86 per cent of the total.

Railroads engaged in any systematic agricultural promotion work operated 191,000 miles and entered counties whose land area was 1,697,000 acres, or 89 per cent of the land area of the entire country (excluding Alaska and the island possessions). Details for the geographic divisions appear in Table 2.

Lines of work not belonging strictly to either of these principal classes include, among other things, efforts to increase the area of farm land, to assist in supplying farm laborers, and to establish markets. Railroads undertaking one or more of these minor branches of development work are also generally engaged in soliciting new settlers, in agricultural education, or in both. Complete information of the development work of all railroads represented in Tables 1 to 4, inclusive, is not available, so it is not possible to show the extent of each minor phase or subdivision of the movement. The data for the two general classes, soliciting settlers and promoting education, however, show approximately the extent of the work.

TABLE 2.—*Total land area in counties containing railroads engaged in organized efforts to promote agriculture.*¹

Geographic division. ²	Total land area.	Counties in which were located railroads engaged in organized efforts to—					
		Increase the number of farmers.		Promote agricultural education.		Increase the number of farmers or promote agricultural education.	
		Land area.	Per cent of total.	Land area.	Per cent of total.	Land area.	Per cent of total.
	<i>Acres.</i>	<i>Acres.</i>	<i>Per ct.</i>	<i>Acres.</i>	<i>Per ct.</i>	<i>Acres.</i>	<i>Per ct.</i>
North Atlantic.....	103,664,640	65,827,200	63.5	101,061,760	97.5	101,061,760	97.5
South Atlantic.....	172,205,440	142,821,760	82.9	159,847,040	92.8	159,984,640	92.9
North Central:							
East of Mississippi River.....	157,160,960	101,799,040	64.8	138,483,840	88.1	148,799,360	94.7
West of Mississippi River.....	326,914,560	307,303,746	94.0	290,467,840	88.9	309,048,480	94.5
South Central:							
East of Mississippi River.....	114,885,760	103,104,640	89.7	100,571,520	87.5	103,104,640	89.7
West of Mississippi River.....	275,037,440	231,653,120	84.2	233,021,440	84.7	236,791,680	86.1
Rocky Mountain.....	549,840,000	459,297,280	83.5	446,149,120	81.1	465,020,160	84.6
Pacific Coast	203,580,800	173,210,240	85.1	173,210,240	85.1	173,210,240	85.1
United States..	1,903,289,600	1,585,017,026	83.3	1,642,812,800	86.3	1,697,020,960	89.2

¹ The figures in this table are based upon the census of 1910; and the counties are grouped according to the railroads' agricultural promotion work that was reported to be in progress in the year ending June 30, 1912.

² For boundaries of each geographic division see fig. 2, p. 14.

AREA OF FARMS.

The fraction of agricultural land subject to the influence of the railroad promotion work is indicated in Table 3. Of the 879,000,000 acres in all farms, 738,000,000 acres, or 84 per cent, was in counties having railroads engaged in soliciting agricultural settlers, while the farm area in counties subject to the agricultural education work of railroads was somewhat greater, being nearly 801,000,000 acres, or over 91 per cent of the total. The figures refer to 1910, while the counties are classified according to the railroad's agricultural promotion that was being carried on in the year ending June 30, 1912. The changes in acreage from 1910 to 1912, it may be safely assumed, were not enough to change materially the figures in Table 3, so that the data may be taken to refer practically to the year ending June 30, 1912. The same is true of Tables 2 and 4.

By geographic divisions, the highest percentage of farm land subject to railroad settlement schemes was in the North Central States lying west of the Mississippi River. In this division more than 97 per cent of the total farm acreage lay in counties reached by railroads engaged in this work. It should be understood, however, that these railroads were apparently not making much, if any, effort to induce people to migrate to the more highly developed farming sections in the eastern and southeastern parts of this division, for instance, in Iowa. A highly developed, thickly settled farming region is not usually taken as the object of "immigration" or "colonization" movements. The next geographic division in order of importance in the railroad settlement work is composed of the three States on the Pacific coast, where 92 per cent of the farm land was reached by railroads engaged in this work; and next in order came the Rocky Mountain States, where the percentage was nearly 92. The least percentage reported for any geographic division was for the North Central States east of the Mississippi River, and even here nearly three-fifths of the farm land was in counties served by railroads engaged in promoting agricultural settlement.

The area of farm land subject to the agricultural education work of railroads ranged from about 98 per cent in the North Atlantic division to nearly 85 per cent in the South Central division west of the Mississippi River. In the South Central division east of the Mississippi River the percentage was nearly 87, and in the remaining five divisions the percentage for each exceeded 92.

Of the entire area of farm land in continental United States, 811,000,000 acres, or 92 per cent, was in counties served by railroads which were engaged in some form of organized agricultural promotion, according to Table 3.

TABLE 3.—*Area of farms in counties containing railroads engaged in organized efforts to promote agriculture.*¹

Geographic division. ²	Total area of farms.	Counties in which were located railroads engaged in organized efforts to—					
		Increase the number of farmers.		Promote agricultural education.		Increase the number of farmers or promote agricultural education.	
		Area of farms.	Per cent of total.	Area of farms.	Per cent of total.	Area of farms.	Per cent of total.
	<i>Acres.</i>	<i>Acres.</i>	<i>Per ct.</i>	<i>Acres.</i>	<i>Per ct.</i>	<i>Acres.</i>	<i>Per ct.</i>
North Atlantic.....	62,905,987	41,517,871	66.0	61,365,514	97.6	61,365,514	97.6
South Atlantic.....	103,782,275	84,619,854	81.5	97,991,026	94.4	98,084,034	94.5
North Central:							
East of Mississippi River.....	117,929,148	69,245,964	58.7	109,056,645	92.5	112,635,972	95.5
West of Mississippi River.....	232,648,121	226,340,025	97.3	215,740,976	92.7	227,021,668	97.6
South Central:							
East of Mississippi River.....	81,520,629	72,198,223	88.6	70,694,849	86.7	72,198,223	88.6
West of Mississippi River.....	169,149,976	141,944,230	83.9	143,553,769	84.9	145,638,283	86.1
Rocky Mountain.....	59,533,420	54,616,096	91.7	55,100,261	92.6	55,865,391	93.8
Pacific Coast.....	51,328,789	47,413,824	92.4	47,413,824	92.4	37,912,766	73.9
United States.....	878,798,345	737,896,087	84.0	800,916,864	91.1	810,722,451	92.3

¹ The figures in this table are based upon the census of 1910; and the counties are grouped according to the railroad's agricultural promotion work that was reported to be in progress in the year ending June 30, 1912.

² For boundaries of each geographic division see fig. 2, p. 14.

NUMBER OF FARMS.

The extent of the agricultural promotion efforts of railroads is illustrated further by the percentage of the number of farms in the counties having railroads engaged in this work. This is shown in Table 4. Comparing this table with Table 3, showing the area of farms, the greatest variation in percentages applying to a geographic division is for the South Central States west of the Mississippi River. The percentage in this division, of individual farms in counties containing railroads making organized efforts to increase the number of farms, was 95, while the corresponding percentage of area was only about 84 per cent. This shows that the work was most extensive where farms were most numerous; only 5 per cent of the individual farms lay outside of the counties having this class of railroads, while 16 per cent of the total farm area was in counties not reported to be subject to such work in this geographic division. A similar contrast exists in regard to the same division for counties sharing in the educational work of railroads. Here 5 per cent of the individual farms were reported to be in counties not reached by these educational efforts. These counties contained 15 per cent of the total farm area.

The entire number of farms in counties subject to the agricultural promotion work of railroads was over 6,000,000, or 95 per cent of the

total. In other words, only 5 per cent of the individual farms of this country in 1911-12 were not located, at least nominally, within reach of the immigration or educational efforts of railroad companies in behalf of agriculture.

TABLE 4.—*Number of farms in counties containing railroads engaged in organized efforts to promote agriculture.*¹

Geographic division. ²	Total number of farms.	Counties in which were located railroads engaged in organized efforts to—					
		Increase the number of farmers.		Promote agricultural education.		Increase the number of farmers or promote agricultural education.	
		Number of farms.	Per cent of total.	Number of farms.	Per cent of total.	Number of farms.	Per cent of total.
North Atlantic.....	657,181	422,788	64.3	638,469	97.2	638,470	97.2
South Atlantic.....	1,111,881	924,626	83.2	1,059,571	95.3	1,060,659	95.4
North Central:							
East of Mississippi River..	1,123,489	650,416	57.9	1,044,905	93.0	1,074,587	95.6
West of Mississippi River.	1,109,948	1,087,096	97.9	1,050,426	94.6	1,090,336	98.2
South Central:							
East of Mississippi River..	1,042,480	936,914	89.9	920,360	88.3	936,914	89.9
West of Mississippi River.	943,186	899,460	95.4	895,349	94.9	907,801	96.2
Rocky Mountain.....	183,446	165,075	90.0	165,556	90.2	168,681	92.0
Pacific coast.....	189,891	179,499	94.5	179,499	94.5	179,499	94.5
United States.....	6,361,502	5,265,874	82.8	5,954,135	93.6	6,056,947	95.2

¹ The figures in this table are based upon the census of 1910; and the counties are grouped according to the railroad's agricultural promotion work that was reported to be in progress in the year ending June 30, 1912.

² For boundaries of each geographic division see fig. 2, p. 14.

SECURING NEW SETTLERS.

IMMIGRATION OFFICIALS.

All railroads are interested in the increase of population along their lines and a large portion of them have officials whose duty it is to solicit new settlers. The title of the official at the head of such work is frequently "immigration agent," or "commissioner of immigration," but his duties are not necessarily limited to soliciting immigrants from foreign countries; in fact, that may be but a small part, or no part at all, of his work. Most of the farmers who move to the regions advertised by these immigration agents come from other parts of the United States and only a small proportion from foreign countries.

EARLY ATTEMPTS TO OBTAIN SETTLERS.

This "immigration" work was begun by some railroads as far back as 1861, and possibly 10 years earlier. The Erie Railroad Co. is said to have run its first immigrant train from New York to the West in 1851. In 1870 the land department of the Union Pacific Railroad was in operation, advertising 12,000,000 acres of farming and mineral lands for sale. "Land-exploring tickets" were advertised. The purchaser of such a ticket was entitled to travel over a given route

with the privilege of stopping over at a number of points, so that he might see the lands advertised. In case he bought a farm from the Union Pacific Railroad Co. he was to be credited with the amount he paid for his ticket.¹

During the construction of the Northern Pacific Railroad its land and immigration agents were employed in soliciting settlers for the new territory that was being opened up. In 1872 the company reported to Congress that there were on file applications for 95,000 acres of the improved land in Minnesota and 45,204 acres in Washington Territory. These applications had not been acted upon because the company had not yet secured a patent to the land. The lands were to be sold by the railroad company, after the title was perfected, on the following terms: Ten per cent of the selling price was to be paid in cash; 10 per cent in one year, and an equal amount for the second and third years; for the next four years, 15 per cent each year, thus giving the new settler seven years in which to pay for his land. The interest on his deferred payments was 7 per cent a year. The company reported also that it erected tenements for settlers when necessary, and had ordered "reception houses" to be built for the accommodation of newly arrived settlers. Tools, seeds, fencing, and other supplies were to be provided for the pioneers on "terms just to both parties," while nurseries for fruit and forest trees were to be established.²

SETTLEMENT WORK IN KANSAS.

An illustration of railroad settlement work in Kansas is afforded by conditions in Barton, Marion, and Harvey Counties. The Atchison, Topeka & Santa Fe Railroad, the first to enter these counties, was opened for traffic in the year 1872, and within a few years began to solicit settlers for the new lands. Considerable work was done in Europe, and numbers of immigrants were induced to settle on farm land along this railroad in Kansas. Of course, there were other influences, as well as those exerted by the railroads, which helped to cause this movement. In 1870, in Barton County, Kans., there were 2 persons of foreign birth; in 1880 the foreign-born population amounted to 2,216, of which 1,027 were born in Germany. During the next 10 years the population of German birth had increased to 1,217, the greatest influx of Germans being prior to 1880.

One of the settlements reported to have been founded by a railroad immigration department was made at Ellinwood, Barton County, in the early eighties and consisted chiefly, if not entirely, of Germans.

According to one of the railroad officials concerned in the work, the most important success of the immigration department was that

¹ Guide to the Union Pacific Railroad lands. Land department, Union Pacific Railroad. Omaha, 1870.

² House of Representatives, Misc. Doc. 228, 42d Cong., 2d sess., June 3, 1872.

of securing a large body of German Mennonites from Russia, who settled principally in Marion and Harvey Counties. They came in the early eighties. According to the census of 1880, there were in Marion County 2 persons who were born in Russia, and in 1890 there were 3,116, the people having arrived within the decade. Most of the Germans of Marion County came prior to 1880, although a considerable number settled between 1880 and 1890. The number of persons of German birth in Marion County in 1870 was 9; in 1880 there were 1,038; and in 1890, 1,465. The principal increase in Harvey County of persons of German birth occurred between 1880 and 1890; there were 478 Germans there at the beginning of this period and 1,315 at the end. The Russians numbered 703 in 1880, and increased to 776 in 1890.

EIGHT COUNTIES OF TEXAS.

Another example of this line of activity in the early eighties was afforded by the work of the Galveston, Harrisburg & San Antonio Railroad in helping to settle some of the farm lands along its lines west of Houston. The immigrants who were secured through the railroad's efforts and other influences included the following nationalities: German, Bohemian, English, Irish, Scotch, Italian, French, and Belgian. The region into which these immigrants came included practically all the counties along the line of this railroad between Houston and a point just west of San Antonio.

This region was settled considerably before the three counties in Kansas, just mentioned. The railroad was first opened in 1854, extending from Houston westward about 80 miles to Columbus in Colorado County. In 1877 the line reached San Antonio. A few years later the extension to El Paso was completed and the connection made there with the Southern Pacific, opened a through rail route between New Orleans and the Pacific coast. This through line, no doubt, encouraged the settlement of the agricultural regions between Houston and San Antonio. In the eight counties of this region the foreign-born inhabitants in 1870 numbered 11,510; in 1880 they had increased to 21,246; and in 1890 to 30,388. The total population of these eight counties in 1890 was 181,734. The people of this region who were born in Germany increased from about 6,000 in 1870 to 9,000 in 1880, and to 13,000 ten years later. The English, including Welsh, numbered in 1880 nearly a thousand more than at the previous census, and in 1890 had increased by nearly 700. A relatively large influx of Austrians took place between 1870 and 1880. The increase during this period amounted to about 150 per cent, and the number in 1880 was over 2,000. No separate returns for 1890 are available for persons born in Austria, but in 1900 this part of the population numbered nearly 3,500 in the eight counties along the lines of this railroad

between Houston and San Antonio. Large relative increases also took place between 1870 and 1890 in the population coming from Ireland, Scotland, Italy, France, Bohemia, and Belgium. The Bohemians increased from 508 in 1870 to 1,268 in 1880. The Irish and Scotch together in 1890 numbered about 1,100, while the Italians, French, and Belgians numbered about 800 all together.

A LOUISIANA PARISH.

On January 1, 1883, the Illinois Central Railroad began to operate its newly acquired through line between Chicago and New Orleans. The Chicago, St. Louis & New Orleans Railroad had been opened for traffic some six years before, between New Orleans and Cairo, on the Ohio River, but the gauge of the road was 5 feet, while the gauge of the Illinois Central, extending from Cairo to Chicago, was 4 feet 8½ inches. In 1881 the gauge of the Chicago, St. Louis & New Orleans Railroad was made the same as that of the Illinois Central, so that it was then possible to run the same cars on both roads. The next year the Illinois Central Railroad Co. gained control of this southern line, and, in 1883, as stated above, began to operate it. The territory along the left bank of the Mississippi River, south of the Ohio, was thus made more easily accessible from the north. Migration from the north began promptly, aided and solicited by the railroad management.

One of the first settlements reported to have been made as a result of the railroad company's efforts was at Hammond, in Tangipahoa Parish, La. The farmers who settled in this neighborhood came largely from Iowa. In 1880 the population of this parish was 9,638, and in 1890 it had increased to 12,655, or 31.3 per cent in 10 years. The increase for the entire State of Louisiana during this time was only 19 per cent. In this parish the value of farm land (including land, fences, and buildings), which was \$499,000 in 1880, had risen to \$1,062,000 in 1890.

MIGRATION INTO NORTH DAKOTA.

In the decade following the efforts just mentioned on the Santa Fe, Illinois Central, and the Galveston, Harrisburg & San Antonio, work was begun by the Great Northern Railway immigration department to induce settlers to move to the new farming lands being opened by that road in North Dakota. The first important movement is reported to have started in the State of Indiana, and the objective point of the proposed immigration was Cando, N. Dak., which had just been reached by the railroad. On March 21, 1893, a party of 300 men, women, and children, in a special passenger train, left Walkerton, Ind., for Cando, N. Dak., and a special freight train of about 40 cars carried the settlers' goods. In the following year it is estimated that

1,800 left the Central States for North Dakota. This movement is said to have increased from year to year until at the end of about ten years the annual movement had exceeded an average of 20,000. A large percentage of the new settlers are reported to have come from Indiana, Ohio, Pennsylvania, Iowa, and Missouri.

RECENT MOVEMENTS.

The efforts of railroad companies to attract new settlers are concerned chiefly with three general divisions of the country: One of them lies west and south of the Missouri River and west of the lower part of the Mississippi River, and extends to the Pacific coast; the second division extends from the Ohio and Potomac Rivers southward to the Gulf of Mexico, and from the Mississippi River to the Atlantic Ocean; while the third and smallest division includes New England and eastern New York. There is more or less work being done to attract settlers to the rest of the United States, the territory north of the Ohio and Potomac Rivers and extending from eastern New York and the coast line of New Jersey, Delaware, and Maryland to the Missouri River; but this region is regarded by the railroad immigration officials rather as a source from which to obtain new settlers than as a place for them to settle. Land values in this region are relatively high, the average per acre for individual States, according to the census for 1910, ranged from \$25.69 to \$95.02, and the mean for all States in this region was \$45.89 per acre. The mean values per acre of farm land for the other three groups mentioned in this paragraph were \$27.79 per acre for the west and southwest, \$17.21 for the south, and \$25.09 for the northeast.

Some of the new lands in the West to which settlers are now (1912) being invited are in the recently irrigated sections west of the Rocky Mountains, and in regions lately made accessible by the opening of new railroads, as in central Oregon. Among the other sections of the United States where new farming areas are being advertised by railroad companies are cut-over timberlands in Wisconsin and drained swamp lands in parts of North Carolina, near the ocean.

Definite figures are lacking as to the number of farmers moving from one part of the United States to another, but a general idea of some of the sources of migration may be formed from statements made by persons engaged in soliciting new settlers. As a rule most of the farmers moving into a new region as a result of railroad settlement work probably come from other parts of the United States, and it is believed that they come from farms more frequently than from towns or cities. Of course, there are exceptions to this general condition. A considerable number of foreigners are reported among new agricultural settlers, and there is no doubt some movement from

towns to farms in the regions for which the railroads are trying to increase the number of farmers.

Of the farmers having recently moved into New York State, a considerable fraction is said to have come from North Central States and some from Norway, Sweden, and Denmark. Some of the western counties of Michigan are receiving settlers from the West and Southwest, including Texas, Colorado, Wyoming, and Montana; while the cut-over timber lands of Wisconsin are reported to be getting some settlers from North Dakota and neighboring States. The region extending from the eastern slope of the Rocky Mountains to the Pacific gets a large part of its new agricultural population from the northern part of the Mississippi Valley, while the newcomers in the South Atlantic and South Central States are reported to hail chiefly from the North Atlantic and North Central States.

METHODS OF SOLICITING NEW SETTLERS.

PRINTED MATTER.

The most general line or phase of immigration work is the issuing of literature describing the regions to which settlers are invited. There is a mass of attractively printed and illustrated booklets issued by various railroads to acquaint prospective settlers with farming conditions in certain regions. In addition to these booklets and circulars, press notices are prepared for newspapers and are published with the other reading matter. Advertisements are inserted in numerous magazines and newspapers, and in some instances regular magazines are published by railroad companies. Authors and publishers are furnished with photographs illustrating something of interest concerning the agricultural advantages of certain regions. While it is to be expected that such literature would naturally call attention to the best side of the story and place little or no emphasis on the disadvantages in the districts advertised, it is nevertheless true that it is to the advantage of the railroad company to secure a satisfied settler, and much to its disadvantage to have him become dissatisfied, return home, and spread abroad unfavorable accounts of the country where he failed.

In a large number of descriptive booklets and circulars the pictures are made from photographs and show not only live stock, poultry, and products of the soil, but also landscapes, groups of farm buildings, and other general views which will guide, if only roughly, the judgment of a farmer who is looking for a new home.

This literature serves well to give general ideas of the regions covered, but no one should depend upon it entirely in his choice of a farm. To decide wisely in buying a piece of land, the purchaser should by all means go to see it beforehand. No printed or oral

description takes the place of personal inspection. What suits one farmer might ruin another; and the surest way for a person to avoid buying an unsuitable farm is to see the land for himself.

EXHIBITS FOR ADVERTISING PURPOSES.

An old form of advertising consists in an exhibit of the products of the part of the country to which settlers are invited. Some of these exhibits are placed in rooms secured for the purpose; others in a room used for other purposes by the railroad company as a passenger waiting room or ticket office, or rooms used by some immigration or industrial agent. Again, an exhibit may be established in a given city or town for a few months and then moved to another city or town, and so on until a large circuit is completed. A more transient exhibit is that afforded by the special car, which stays but a day or so at a place. The exhibit afforded by such a car may be accompanied by illustrated lectures given in a public hall at the point where the car is stopping. An exhibit on a large scale, as the Land Show at Chicago, or the Land and Irrigation Exhibit at New York, is due to the combined efforts of a number of railroads.

Exhibits for advertising purposes are also made by railroad companies at State fairs. These exhibits are to be distinguished from those made by the companies for the purpose of showing what the agriculture of the surrounding country will do. The advertising exhibits show the products of a distant region, and the object is to induce settlers to go there.

In addition to literature, exhibits, and lectures, some immigration officials solicit through private correspondence and personal interviews.

SPECIAL INDUCEMENTS.

HOMESEEEKERS' EXCURSIONS.

To induce prospective settlers to visit the various places advertised, tickets are sold at low rates by a number of railroads. These homeseekers' excursion tickets, as they are usually called, enable the purchaser to spend a few weeks traveling within a given territory and to stop over at such points as may interest him. Frequently the time allowed for the entire round trip is limited to 25 days. The cost of a round-trip ticket over a given route may be but slightly more than the regular fare one way. On some railroads the homeseekers' excursion tickets are sold the year round, while on other roads but part of the year. They are usually sold for use at starting points on two days of each month—for instance, on the first and third Tuesdays. The territory reached by these homeseekers' excursions is mostly included between the eastern slope of the Rocky Mountains and the Pacific coast and in the region consisting of the South Central and South Atlantic States.

COLONISTS' FARES.

In addition to the homeseekers' excursion rates, there are occasionally offered low rates for the benefit of settlers who are moving westward to new homes. These are called colonists' excursions, and differ from the homeseekers' excursions in that they provide for transportation in one direction only. They differ also in that the colonists' rates are given only for a limited time, say, for six weeks in the spring, or a like period in the fall. Of course, any purchaser can obtain a homeseeker's or colonist's ticket. Colonists' tickets are usually, if not altogether, sold to points west of the Mississippi River, especially to points west of the Rocky Mountains; and the tourist-car and second-class passenger service of these western routes helps make possible these low fares.

Not only are low passenger-fares offered to encourage new settlers, but favorable freight rates also are quoted. For instance, the household goods and farming implements of settlers are regularly classed as subject to lower rates than are other or unused implements and furniture.

COOPERATION OF RAILROADS WITH OTHER ORGANIZATIONS.

A considerable amount of literature is issued at the joint expense of a town or county and the railroad. One road reports that 50 different localities participate with it in the joint publication of advertising literature.

Another kind of cooperation is illustrated by development associations in Michigan. Each association is composed of a number of counties, railroads, steamboat lines, and commercial houses. The counties take part as political units, having authority to spend money for the purpose of attracting settlers.

The railroad immigration officials cooperate also with State boards of immigration and promotion, lending assistance in advertising and in distributing literature.

INSTANCES OF SUCCESS.

It is not always possible for an immigration official to measure even approximately how much he has succeeded or failed, as so many other factors are working for the settlement of the region to which his attention is devoted. The number of homeseekers' excursion tickets sold is not necessarily an indication of the number of homeseekers who visited a given locality, nor is the number of colonists' tickets sold any test of the number of new settlers going to a region. Many persons who are neither homeseekers nor colonists take advantage of the low rates, and their number would not be indicated by the number of tickets reported as sold. However, some immigration officials

attempt to keep a fairly accurate account of the number of new settlers and to form a rough estimate of the number attracted on account of the railroad's efforts. Three railroads in New York State report instances of success. One official claims to have attracted farmers to his regions by an exhibit of produce at a certain fair. Another official reports that from 70 to 100 families have located in New York within the last eight months of 1911, while a third reports a large increase in settlement along his lines, mentioning especially immigrants from Norway, Sweden, and Denmark. One of the Michigan development bureaus reports that up to May, 1911, after a campaign of a year and a half, about 1,000 newcomers had entered the region represented by the bureau, and that the emigration from those counties had been cut down 75 per cent. Along the Atlantic seaboard, one of the immigration agents reports that in one year about 4,000 families of agricultural settlers came to the farms along his road. Another agent whose road reaches this region claims that about 500 farmers have come into his territory within the past few years. In the South Central States one official reports that 300,000 acres of land have been sold to about 2,000 actual settlers during the eight years ending with 1910. One railroad in the Southwest, having limited means for such work, issued an attractive booklet, and as a result received 25,000 inquiries relating to the lands in its territory. One of the larger systems, reaching into the South Central States, reports that in the four years ending May 31, 1910, 92,683 families, composed of 370,732 persons, settled in the territory tributary to its lines. Of these settlers, about 125,000 were foreign born. Another road reports that from 24 points within one State in the first six months of 1911 there were 26,080 inquiries by mail, 8,088 home-seeking visitors, and 3,305 families actually located on farms. One of the most successful of the immigration commissioners of railroads claims that 75 per cent of the settlers who are attracted to his territory remain there, while only 25 per cent leave.

One railroad system in Texas, which was active in soliciting new settlers until about three years ago, suspended most of this work temporarily on account of unfavorable farming conditions. During the six years ending June 30, 1911, there were unloaded at points on the lines of this system 7,672 carloads of "emigrant outfits." The first four years of this period belonged to the time when special efforts were being made to secure new settlers, and the yearly arrivals of carloads of settlers' goods were, respectively, 843, 1,348, 1,993, and 1,462, or an average of 1,412 carloads. During the next two years, when the special efforts for settlement were suspended, the arrivals of "emigrant outfits" were 1,094 and 932 carloads, respectively, the average being 1,013 a year. This falling off in the annual number of

newcomers may have been due to various causes. Conditions tending to reduce migration were already at work before the activity of the railroad's immigration officials was lessened.

AGRICULTURAL EDUCATION.

COOPERATION WITH FEDERAL AND STATE EXPERTS.

As a rule, the efforts of railroads to promote agricultural education are made in cooperation with Federal or State authorities. The instruction itself is often supplied by a State agricultural college or experiment station or from the United States Department of Agriculture, while the business features of the enterprise, including advertising, are generally managed wholly or partly by the railroad company interested. The share taken by each party in a given cooperative enterprise varies in different instances. Sometimes the railroad furnishes an agricultural expert, and again the business matters, as well as the instruction, are largely in the hands of Federal or State agricultural experts.

INSTRUCTION TRAINS.

Agricultural instruction trains are examples of such cooperation of railroads with Government authorities. The lecturers accompanying such trains are usually members of the faculty of a State agricultural college or experts from a State experiment station or the United States Department of Agriculture. The railroad company provides the train, frequently at a low rate or no charge at all, plans or helps to plan the itinerary, and by advertising and press notices helps to attract people to the various stations where lectures are given and where opportunity is afforded to look at the exhibits in the train. Sometimes an agricultural expert in the employ of the railroad company accompanies the train and assists the other lecturers and demonstrators.

The topics discussed by these train lecturers relate to many phases of agriculture. Among the subjects common to the lectures in most sections of the country are dairying, orchards, fertility of the soil, seed selection, insect pests, plant diseases, marketing, and domestic economy. In the Middle Atlantic States, from New York to Virginia, inclusive, alfalfa and potatoes have been among the prominent subjects, while in the region south of the Ohio and Potomac Rivers truck growing, diversified farming, good roads, and the cotton-boll weevil have been given considerable attention. The topics in North Central States include grain, bacon production, and silos. In the Southwest truck farming, cotton, live stock, fruit growing, and dairying have been discussed from these trains, while in the Rocky Moun-

tain and Pacific coast regions some of the topics were fruit raising, rotation of crops, conservation of moisture, and chemistry of the soil.

A given trip of an instruction train may be devoted to a single topic, such as good roads or seed selection, while another trip may include a variety of topics. The topics treated by the work of one train in January, 1912, included dairying, seed selection, soil fertility, alfalfa, poultry, fruit raising, silage, marketing, and soy beans.

The length of a trip of an agricultural instruction train varies from a few days to several months. The number of daily stops for instruction varies. Some recent trains made one or two such stops a day, while other trains have made eight, nine, or more in one day. On one railroad the agricultural instruction trains run from September 5, 1910, to April 25, 1911, are reported to have covered 8,905 miles in 70 days and provided for 597 meetings, which were attended by 147,748 people. On another railroad a train covered 3,436 miles in 68 days, stopping for 223 meetings, at which the attendance was reported to be 73,663. Still another itinerary included 39 stops, made in 6 days. The last meeting of each day was held in a public hall and not at the train. The total attendance at these 39 meetings was estimated at 9,720.

AGRICULTURAL EXPERTS EMPLOYED BY RAILROADS.

There are many railroad companies which employ agricultural experts. These "agents," "commissioners," or "agriculturists" have in general the duty of encouraging progress in agriculture. The specific duties of an agricultural agent or commissioner vary with the conditions affecting his road. He may visit from farm to farm and make suggestions to farmers. One such official reported that he made in one year 400 visits, all of which were in response to invitations. The value of these visits would tend to increase constantly. The official's knowledge of agriculture would be increased by what he would learn from numerous farmers, and good methods which were known to but few in a given region might, through this traveling official, be made generally known.

Another class of duties belonging to the office of railroad agriculturist is that of supervising or conducting a demonstration farm. If he is a busy man, he may employ a farm superintendent. In fact, the head of the agricultural department of a railroad may have a number of experts to help him in various branches of his work. Experimental plots are worked on private farms by the farmers themselves, but under direction of a railroad official; the supervision of such work is another duty of the railroad agriculturist. He also is concerned with agricultural instruction trains and with soliciting or encouraging State or Federal agricultural experiments and demonstrations in his territory. He may also take part in forming farmers'

associations. Numerous organizations for the improvement of product and for cooperative marketing are credited, partly at least, to efforts of railroad officials.

A number of railroads, especially those whose agricultural tonnage is not very large, assign the duties of "agriculturist," where they are to be performed at all, to an industrial agent, general freight agent, or some other.

RAILROAD FARMS.

Among the States in which railroads were conducting experimental or demonstration farms in 1911 were Maine, New York, Delaware, Virginia, North Carolina, Montana, and Texas. Some of these farms were conducted to show the possibilities of raising vegetables in certain regions along the Atlantic coast; one farm, located up on the Blue Ridge Mountains, was devoted to fruit, and others served as examples of other branches of agriculture.

Sometimes instead of conducting a farm of its own a railroad company may select one or more private farms along the line of its road and refer to them as models, or at least as worth the consideration of a farmer who wishes to be progressive. State experimental farms are also available for the same purpose, and a railroad company may often find it just as satisfactory to refer to the State farm as to one operated by the company.

DEMONSTRATION PLOTS.

A favorite plan of railroad agriculturists to show farming methods is by use of a plot on a private farm. The farmer, in some instances, is paid for the use of an acre, is furnished with the seed, and possibly some special implement, as a subsoil plow, and is given the crop. He, on the other hand, is required to follow the directions given by the railroad's representative. Under such conditions the farmer himself becomes an observer, and if the experiment is successful he may apply the new methods in his own work. His neighbors, it is claimed by some advocates of this plan, are apt to consider seriously the results of the experiment, since it was performed by one of their number and on a farm similar to their own. However this may be, the fact that only a small plot is used in one community makes it possible to reach a considerable number of communities extending over a large area. One railroad had in July, 1911, 44 such plots scattered along about 7,000 miles of the main line and branches of the road. This road had a demonstration farm also. Another railroad, which operated somewhat more than 7,000 miles, reported several hundred of such experimental plots in July, 1911. Visitors are invited to inspect these exhibits of farming operations. Where practicable, these demonstration plots may be located so that they can be easily reached from a railroad station.

In addition to conducting their own demonstrations railroad agriculturists often try to get State or Federal authorities to undertake such work in certain localities, or where the work is already in progress, to encourage it as they may have opportunity to do so.

PRIZES FOR FARM PRODUCTS.

Prizes are frequently offered by railroad companies for exhibits at agricultural fairs. One of the larger railroads reported a series of prizes for corn. One prize was awarded to the successful competitor from each county, and a grand prize was awarded for the best exhibit for the State. Another large company offered seven prizes, of \$100 each, to competitors from the farms in the region served by the railroad. A small road, operating some 260 miles, offered \$300 in prizes to boys' cotton clubs, in addition to premiums at agricultural fairs.

The management of at least one system of railroads offers fine live stock as prizes. The successful competitors in boys' corn clubs are given thoroughbred boars. On another road of this system a Percheron mare was given as State prize in each of two States, and a registered Berkshire boar as a prize in each county within a given region.

Another kind of reward offered by a railroad for success in farming is a free scholarship for a short course in agriculture at a State college. One railroad has offered such a scholarship to one person in each county reached by its lines within a given State, and nearly all the scholarships were awarded the first year the experiment was made.

AGRICULTURAL ASSOCIATIONS.

The agricultural representative of a railroad is often engaged in work connected with farmers' associations and with special public meetings held in the interest of farming, but not necessarily connected with any permanent agricultural organization. The part he may take depends upon various conditions. He may be asked informally by officers of an association for some advice on a special topic, he may make an address at a public meeting, or he may simply attend a meeting to learn more of agricultural conditions in his territory and to get better acquainted with farmers. Again, he may take a leading part in forming agricultural organizations. One railroad company recently sent an official over its lines to organize live-stock breeders' associations in nearly every county entered by the railroad. These associations once formed were encouraged by the railroad to hold public sales of registered stock. During the first year after these organizations were started 20 carloads, or 400 head, of pure-bred animals are reported to have been shipped into the territory served by this railroad. Another railroad in the same section of the United

States is reported to have made even greater efforts in organizing live-stock breeders' associations.

The agriculturist of still another road devotes some time to organizing cooperative marketing associations and to helping them find markets for their produce. In one of the South Atlantic States, in 1911, there were five alfalfa clubs organized, partly through the efforts of a railroad agricultural official. Two other similar officials, one in the southeast and the other west of the Mississippi River, both report their activity in promoting boys' corn clubs.

In some parts of the country, notably where agricultural associations are well established, there are fewer instances of aid being given by railroads; in fact, many of the railroad agricultural departments report little or no work in connection with farmers' organizations as such.

In at least one old farming region, where there is a considerable number of newly arrived farmers, the railroad endeavors to bring old and new residents together by means of public agricultural meetings.

MARKETING.

In one of the smaller cities, a movement was begun recently to establish a public market house for the sale of produce. This enterprise was the means of starting an agricultural promotion scheme on the part of one of the railroads on which the city was located. The general freight agent of this railroad undertook to make truck growing more extensive along his road, for the purpose of increasing the supply of "home-grown" produce which might be sold in the proposed market. He arranged with the State agricultural college for an instruction train to be run in the winter of 1911-12. The railroad offered to furnish the train without charge.

The subject of marketing receives considerable attention from the agricultural officials of other roads also. One large railroad system is said to employ men experienced in produce marketing and to send them among the farmers in its territory to give advice as to how and where to sell produce. Other railroads also give similar help in this way. Some of this assistance in marketing is given in regions where there are a number of recently arrived farmers who need advice for the first season or two. Marketing is also an important topic in agricultural instruction work in a community where a product is being introduced or its production increased on a large scale.

The commercial agent of a road in the North Atlantic States organized about 30 farmers' associations along the line of the road and united them by means of a central organization called the executive committee. This committee meets twice a month. The work of

the committee is concerned partly with standards of packing and grading. To facilitate marketing further, the railroad established what it calls a "freight-express" service, giving quick movement at moderate rates, or, as expressed by the commercial agent, "express time" with "freight charges." The executive committee of the farmers' organizations selected agents to sell their produce. This quick-transportation service is offered, of course, to all shippers. It was installed on April 15, 1912. At first, sales were made direct from the cars, but the railroad company intended, as soon as practicable, to build market houses at a number of towns along its line for the use of producers and their agents. This project was abandoned after a few months of trial.

The freight-traffic officials render a greater or less amount of help in marketing produce, on special occasions even when the marketing is not given attention by the road's agricultural department. An instance is reported of a trial shipment of grapes which was prepared for market, shipped, handled by wholesale dealers, and sold through retail dealers; all in consequence of the efforts of a railroad freight official. He had tried to make this first shipment a financial success for all concerned, in order to start a trade in grapes from a certain region, and thus increase the railroad's traffic in high-class freight.

SUPPLY OF FARM LABOR.

Another part of a railroad agriculturist's work may be helping farmers to find laborers. One of the most active railroads engaging in this work uses the following plan: A blank request is filled by the farmer who desires to hire a man. This written request describes the kind of laborer required, mentions the wages to be paid, and gives other information to guide those who are to help find the laborers. Such a request may be handed by the applicant to a railroad station agent, who forwards it to the proper official of the railroad. The request is then referred to the State department of agriculture. When it is necessary for the farmer to advance money to pay the railroad fare of laborers, the money may be forwarded by the local ticket agent. A corresponding service is rendered by the railroad in finding employment for farm laborers. Blanks are sent to various communities to be used in giving information "regarding places for farm labor."

For this particular road, an important part of its service rendered consists in bringing the farmers in touch with the State department of agriculture. The large force of station and ticket agents is used to advantage in this work. A farmer who wishes to hire a man can talk the matter over with a neighboring station agent, in addition to writing out the formal application; and, on the other

hand, the local agent can make personal inquiries direct of farmers as to places for men who are looking for farm work. The agent, on the other hand, is in frequent and regular communication with the railroad's general officers, and they in turn can collect and classify the applications and reports and present them in quantities to the State officials.

INCREASING THE AREA OF FARM LAND.

The agricultural promotion projects of railroad companies include not only efforts to make farms yield greater returns and to increase the number of farmers but also efforts to make more land available for farming purposes. This last kind of agricultural work is not so extensive as some other kinds but is important enough to deserve mention here.

Among the ways in which new lands are made available for farming purposes are by the opening for settlement of part or all of an Indian reservation, by building railroads to reach places remote from transportation service, by irrigation, by drainage, and by placing on the market, under conditions of sale suited to prospective farmers, large tracts of waste land, notably those from which timber has been cut.

Of the five ways mentioned above, the last three are objects of special efforts in the strictly agricultural work of railroad companies. These efforts often, if not usually, consist in trying to induce other authorities to take action. Irrigation schemes are advocated and encouraged, and drainage of certain regions is urged by the various railroad managements, while owners of large tracts of cut-over timberlands are encouraged to place them on the market in tracts of suitable size and on terms favorable to prospective farmers.

Among the places where railroads are interested in the drainage of swamp lands are in tidewater North Carolina and along the lower Mississippi River. Irrigation projects to which railroad agriculturists give at least moral support are found in various places west of the Rocky Mountains, while among the regions where cut-over timberlands are being considered in this work are Maine, West Virginia, Michigan, Wisconsin, some of the South Central States, and the Pacific Northwest.

There are instances, however, in which a railroad company takes an active part in adding to the area of available farm land. Large tracts are still owned by railroads and parts of this area which can be prepared for cultivation are being made ready for sale to new settlers. Instances of this are afforded by a railroad in the Southwest which is offering its irrigated lands for sale, and by a road in

the North which is testing the agricultural value of its cut-over timberlands, clearing some of them, and offering small tracts to prospective fruit growers and truck farmers.

LITERATURE.

SIZES AND CONTENTS.

A large number of publications are issued by railroads in the interest of agricultural development. These, of course, vary considerably as to size, form, and contents. To obtain a general summary of some of the characteristics, 435 different publications have been selected. Of these, 387 were issued primarily to solicit settlers for certain regions, while 48 consisted of treatises, each relating to some special phase of agriculture. For convenience of the user, about 30 of these publications were issued in what may be called "pocket size," having a width of less than $3\frac{1}{2}$ inches. The average number of pages of the 435 publications is 24, and the average number of illustrations 15. The illustrations are largely from photographs. In addition to the pictures there are numerous maps, some of which are especially valuable on account of their clearness and the details shown. In the publications in question there are 387 maps. Frequently a map represents in detail a much smaller area than is usually shown in an atlas or a textbook on geography, so that the publication containing the map is worthy of a place in a private or a public library.

DISTRIBUTION.

Of the publications intended to attract settlers, some treat of entire States, or groups of States, and others of localities within States. For instance, a railroad will issue, in cheap form, a general pamphlet covering an entire State and distribute the pamphlet widely, in search of prospective settlers. When such persons are located and it is learned in what section they are interested, then literature treating specifically of that section is sent to them.

One railroad system shares with communities along its lines in the expense of issuing booklets. In the beginning of 1912 more than 50 communities, issuing each that many sets of pamphlets, shared with these railroads the expense of such advertising. Some of these communities issued each a small folder having a post card attached. The folder described briefly the advantages of the region in question, giving attractive photographs, and urging each person interested to enter his name and address on the card and return it to the local chamber of commerce for further information. In reply to this inquiry a larger and more elaborate booklet was sent. The chamber of commerce also offered to answer specific questions relating to the community.

A number of periodicals are also issued by railroads in the interest of agriculture. These periodicals are devoted chiefly to descriptions of certain regions and are apparently designed to attract new settlers, but frequently methods of agriculture are also treated. Some of these publications are issued quarterly and others appear once a month. They are usually distributed gratuitously, as are other agricultural publications of the railroads, but more or less care is usually taken to avoid wasting them.

One of the most noteworthy periodicals issued by a railroad company to attract new settlers is a standard monthly magazine. The contents of an issue of this magazine are similar in variety to what is usually found in other popular monthlies, except that nearly all the articles refer to a certain region. This magazine is regularly sold and, except for sample copies, is not distributed gratuitously.

The editions of these publications are apt to be large. Forty thousand copies were issued of a small pocket handbook of potato culture. One railroad in the Southwest issued an edition of 25,000 copies of a publication setting forth the advantages of the farming land in that section; a State handbook had an edition of 40,000; while each of several other States were advertised by handbooks, of which 10,000 copies of each were printed. One quarterly publication, devoted both to soliciting settlers and to instruction in agriculture, was issued in editions of from 10,000 to 15,000. A folder containing on one side a detail map of a State and on the other side descriptive matter was reported to have been printed in an edition of 150,000 copies, while 350,000 copies of a publication describing a section of a State are said by the publisher to have been printed.

FORESTRY.

A number of railroads have undertaken to plant forest trees to serve as a source of supply for ties. The first plantings consisted chiefly of catalpa trees, but within the past five or six years locust, eucalyptus, red oak, and Scotch pine have predominated. The first planting on the part of the railroad company, reported to the Forest Service of the United States Department of Agriculture, consisted of 400 acres of catalpa trees, which were set out in Kansas in 1879-1882. The plantings made by railroads, as reported to the Forest Service up to the end of 1905, were as follows: In Alabama, 295 acres; Florida, 74; Illinois, 166; Indiana, 43; Kansas, 400; Kentucky, 165½; Louisiana, 200; Massachusetts, 62; Michigan, 9; Pennsylvania, 699; and Virginia, 6 acres. Of these areas, all but that in Kansas were planted subsequent to 1899.

A few railroads have continued to plant forest trees on a large scale since 1905. One railroad plantation of eucalyptus trees is being made in southern California at the rate of about 350 acres a

year. Up to the end of 1911, 2,250 acres had been planted with about 2,000,000 trees. The trees were planted 5 feet apart in rows which were 8 feet apart. The entire forest is to contain 7,000 acres when complete. The average cost, including clearing the ground, plowing, planting, and cultivating for two seasons after planting, is said to average \$32.15 per acre.

Another large planting, which is being made by an eastern railroad, amounted, at the end of 1911, to 2,950 acres. During 1902-1906 all the trees planted were locust, but, beginning with 1907, red oak, Scotch pine, and many other varieties were included in the young forests. The numbers of the different kinds of trees planted by this railroad from 1902 to 1911, inclusive, were given as follows: Red oak, 2,067,529; locust, 1,915,235; Scotch pine, 371,711; European larch, 47,045; Norway spruce, 46,500; catalpa, 40,605; pin oak, 26,220; white pine, 14,372; black walnut, 10,885; and other species, 77,524; making a total of 4,617,626.

A third railroad company, which began forestry work more recently than did either company mentioned above, planted in 1908 about 18,000 trees; in 1910, 360,000; and in 1911, 381,000 trees, besides sowing, in 1909, 25 acres with seed of forest trees. These examples of tree planting represent exceptional cases. There are comparatively few railroads now engaged in growing forest trees even on a small scale.

Some railroads have undertaken to preserve their timber lands in order to keep a source of supply for ties and other necessary wood products. The railroad whose tree-planting report was quoted in the preceding paragraph is reported to have put about 100,000 acres under systematic forestry management.

Another part of forestry that concerns railroads is the prevention of forest fires. To keep sparks from locomotives from setting fire to forests some railroads clear the trees and brush from strips of land along the right of way. In some parts of the United States the law requires railroads to take such precaution, but in others the work of railroads is voluntary. Railroads also contribute to the expenses of protective forest-fire associations in the Northwest. One railroad alone is said to have contributed \$14,000 to such associations during 1911.¹

ORNAMENTAL GARDENING.

The plots of grass, flowers, and shrubbery at numerous railroad stations make them more attractive to patrons of the railroad, and probably are kept chiefly for that purpose. Nevertheless these ornamental gardens represent a prominent feature in the horticultural work of railroads and should be mentioned in a general description of the agricultural promotion projects of private corporations.

¹ E. A. Sterling, in the *Railway Age Gazette*, Feb. 9, 1912, p. 234.

In some cases, the local authorities of a town share with the railroad the expense and management of the parking at a station, while in other cases the railroad alone takes care of the plot. These station gardens, of course, differ considerably as to size and design, and they are too numerous and varied to be adequately described in this bulletin.

A few typical plots may be taken to serve as illustrations of some phases of railroad horticulture. At one small station in Maryland a triangular grass plot, about 100 feet long and 60 feet wide at the base, is surrounded on two sides by a privet hedge and contains a few flower beds, a row of shade trees next the station platform, and in one corner a clump of evergreens. In contrast to this plot, in point of size, are the grounds on which are located a passenger station, hotel, and railroad general offices in one of the smaller cities in the South. The hotel is situated on a hill overlooking the passenger station and is surrounded by well-kept grounds extending to the station on one hand and to the general offices of the railroad on the other. Lawns, ornamental and shade trees, shrubbery, and flowers are included in these grounds, and an attractive stone wall incloses them. The walks and roadways are also to be admired. The ornamental gardening work of the railroad having these grounds is in charge of a landscape gardener who, it is said, was appointed in 1883 to "take entire charge of the landscape work in connection with hotels, depots, general offices, and other buildings, which were then in the course of construction."

Still another phase of station gardening is illustrated in one of the larger terminal yards. Here are strips of well-kept grass located between tracks, where space will permit, and at places along the edge of the yards. The sides of a cut, where a station platform is located in one of the large cities, are neatly covered with lawn grass; while in still another city the sides of a long cut, which is traversed by a railroad, have been planted with vines.

One of the smallest, but possibly to the traveler one of the most welcome of these plots, is at a station in the Mohave Desert in southern California. Several palm trees are growing on a strip of grass along the track at a water station and share with the locomotives the water from the company's tank. The contrast of this bit of vegetation with the surrounding desert is striking.

SUMMARIES OF WORK FOR TYPICAL RAILROADS.

The leading phases of the work of agricultural promotion on the part of railroads have been discussed on the preceding pages. The part taken by an individual road varies with the road and with local farming conditions. The lines of work undertaken by typical

roads are illustrated by the following quotations from the officials in charge of the several enterprises described. These officials were asked to mention what their companies were doing in the way of tree planting and ornamental gardening, as well as in the promotion of agriculture.

Road A.—In regard to securing more farmers for regions served by our road, we have conducted an advertising campaign throughout the Middle West.

In regard to the securing of labor for farmers, we are cooperating with the State department of agriculture.

We have run agricultural trains, but are not operating any this year. We have under consideration the equipment of a coach as a traveling school, with teachers from the State agricultural college.

We have two demonstration farms. We are also assisting farmers with personal advice regarding farm problems which may arise.

From time to time we also issue publications regarding approved farm practices. We offered seven prizes, of the value of \$100 each, at the State agricultural fair. We are rendering assistance in forming farm bureaus in cooperation with boards of trade in various cities.

We are doing no work in forestry. Ornamental gardening at stations is carried on under the direction of the division superintendents by gardeners.

Road B.—We are offering this year \$300 in prizes to boys' cotton club contestants. The State department of agriculture had a "better seed and live stock" train on this road during the spring of 1911, and we are endeavoring to get them to repeat the performance this spring (1912).

The railroad company uses every effort to place the prospective settler in direct communication with the local real-estate dealers, and publishes a booklet giving an account of the resources of the section traversed by this line.

So far we have taken no interest in tree planting nor in ornamental gardening at stations.

Road C.—The lands offered for sale are in the hands, as a rule, of the sawmill people and are usually sold through land agents or selling companies organized for that purpose.

This railroad advertises extensively in the North and Northwest the agricultural advantages of this section. A list of inquiries made in response to this advertising is made weekly and a copy is sent to each real-estate dealer along the line.

Our agricultural agent, when the new settler has secured his land, visits him, and advises as to what he should plant and when he should plant it, how he should prepare his land, the manner of cultivation, and how to grade and pack. The agent also aids the new farmer in securing a market.

This railroad does not maintain model farms. There are, however, two or three such farms being operated by land companies at points on our line. No educational trains have been run as yet.

Prizes are offered by the railroad for exhibits at fairs. At every point along our line we have farmers' organizations, the object of which is that we may instruct them as a unit rather than individually. Another benefit from the associations is that the new settler is introduced to his new neighbors, the natives or old settlers.

This is a new railroad. It has no ornamental station gardening as yet. This feature will be added at the proper time. No trees have been planted as yet.

Road D.—We run agricultural trains and give prizes at the county fairs. We are giving away seeds and fertilizers to growers, with the understanding that they will use them according to our instructions. This is for the purpose of demonstrations, which are located near stations within easy access to visitors.

This office publishes an agricultural bulletin, which is issued monthly and mailed free to growers along the line. This is educational in nature; it is used also to advertise the growers' products among commission men.

We also organize fruit and truck growers' associations, help them make up carload lots, and find markets.

Road E.—We have induced owners of tracts of cut-over timber lands to subdivide them into small tracts and sell at reasonable prices and on liberal terms of payment. We are securing many new farmers along our line by advertising. In one of the counties on our line over 8,000 acres of new land was cleared and put into cultivation the past year.

We are endeavoring to improve the results of farming by the offering of prizes, organization of corn clubs, exhibits at fairs, agricultural trains, and the employment of an expert in the growing, packing, and shipping of fruits and vegetables.

We have planted shade trees and ornamental shrubbery around our section houses, and supplied the families with flower and garden seeds.

Road F.—Our great struggle is to secure more farmers for lands along our road. While we do not send personal agents, we do spend immense sums of money in advertising for the same purpose.

This company has operated demonstration trains at various intervals for the past three or four years.

It is the general practice of this railroad now, when a new station is built, to provide for ornamental gardening.

Road G.—We encourage the reclamation of swamp and overflow lands by the individual owners, and the purchase of cut-over timber lands by large colonization companies, who make them available for the small farmer.

We publish pamphlets on the agricultural possibilities of our section, and distribute this literature among prospective settlers in the Northern States.

Our management recently conducted a good roads demonstration train over its entire line.

We publish for free distribution among local agriculturists and prospective settlers the following pamphlets: Agricultural Products, Tobacco Growing, Water Power, Manufacturing Sites, Timber Resources, Mineral Deposits, Lands for Sale, Peach Growing, Poultry and Egg Production, and a Soil and Geological Map.

We recently conducted a live-stock itinerary over our line, resulting in the formation of a local breeders' association in approximately every county served by us. Under the auspices of such associations we have encouraged public sales of registered stock.

A system of ornamental gardening is maintained. Plots have been established at every station where conditions will permit.

Road H.—Our road is not making an organized effort to bring farmers into the regions contiguous to our line at this time, but when conditions are propitious we exert our best efforts to induce farmers to locate in our territory. We have remained inactive during the last three years for the reason that conditions were not favorable.

We have engaged in agricultural educational work during favorable years for the last 10 years or more by sending a corps of lecturers, who are experienced in their respective lines, to deliver lectures to the farmers. This has resulted in much good in our locality.

In 1900 or 1901 lectures on forestry were delivered at 14 points. This lecture campaign resulted in the planting of 250,000 trees, some of which are now doing service as fence posts. After this we had specialists in horticulture, hog raisers, alfalfa growers, and cotton specialists.

Road I.—This company had originally a land grant of 606,000 acres; of this amount, approximately 5,000 acres remain to be secured from the State. These lands contain timber, meadows, and considerable stretches of open swamp, or what is known as

peat bog. As rapidly as the merchantable timber is being removed, this company is placing the lands on the market for agricultural purposes, where the lands are suitable for that use, and endeavoring to induce settlers to locate upon the lands for the purpose of farming.

To determine the agricultural value of this land, this company has operated a demonstration farm for the past three years and has made on other parts of the land experiments in soil treatment and crop rotation.

At our demonstration farm we maintain a thoroughbred bull and thoroughbred boars; also two lines of thoroughbred poultry, White Leghorns and Rhode Island Reds; giving the service of the animals for a nominal fee. We are also starting a nursery of small fruits, such as raspberries, currants, and gooseberries, and giving to the settlers small quantities to plant.

The company employs an agricultural expert to take charge of the farm and to put in at least two-thirds of his time traveling throughout the district, in which the company's lands are located, to assist new settlers in starting their work, to organize farmers' clubs, to assist them in finding markets, and to assist them generally.

In each of the past two years special agricultural trains have made a two weeks' trip, holding three meetings a day. Speakers were furnished by the State University. The lectures covered dairying, potato and cabbage raising, truck farming, poultry raising, and marketing. The train was operated just after the settlers had finished their winter work in the woods and before they could get at their farm work.

The company gives annually \$100 in special premiums to each county fair in the region served by the railroad. A special prize is given for the best exhibit of agricultural products by any boys' or girls' farm club.

In one of our colonies we cleared, grubbed, and broke about 500 acres, divided it mostly into tracts of 10 or 20 acres, and sold them to settlers. The purchasers were given a number of years in which to pay for their land.

In addition to this class of work, this company has spent considerable sums for building public highways.

Road J.—We have installed a freight-express service—express time, freight charges. I organized the farmers along the line of our road into associations. So far, we have thirty some of them. Then we have a central organization, called the executive committee, on which each organization is entitled to representation. This committee meets twice a month. The first work for this committee to take up will be a set of standards for all kinds of produce, which are to be shipped by members of the associations.

The executive committee elected an agent who has charge of all consignments and sells direct to consumers or other buyers. All produce is packed and marked by the producer; and is sold in original packages, the name of the producer and the mark of the association being intended as a guarantee of quality. The railroad company furnishes the facilities for the sale of the products. At present we are selling direct from cars, but just as soon as we can arrange for it, we will build market houses for the better accommodation of both shipper and buyer.

This service will be extended to growers' associations of all kinds, wherever located.

ANALYSIS OF THE PRINCIPAL LINES OF WORK UNDERTAKEN BY RAILROAD COMPANIES FOR THE PROMOTION OF AGRICULTURE.

[Not including features belonging strictly to transportation.]

- I. Efforts to increase the area of farm land (chiefly by cooperation with others):
 - A. Irrigation of arid or partly arid lands.
 - B. Drainage of swamp lands.
 - C. Making cut-over timber lands more easily available for small farms.

II. Efforts to increase the number of farmers:

A. Methods—

1. Literature—

- a. Descriptive booklets, circulars, and post cards.
- b. Regular magazines, issued by railroad company.
- c. Press notices.
- d. Advertisements in periodicals.
- e. Lists of farms for sale.
- f. Photographs furnished to authors and publishers.

2. Exhibits of products of the regions advertised—

a. Permanent—

- (1) In room secured for the purpose.
- (2) In passenger waiting room, railroad station.
- (3) In city ticket office.

b. Traveling—

- (1) In buildings, a few months in each city or town.
- (2) In "exhibit" cars.

c. Special exhibitions at "land shows."

d. State and other agricultural fairs.

3. Illustrated lectures.

4. Correspondence and personal solicitation.

B. Regions from which settlers are generally sought—

1. United States (chiefly)—

- a. North Central States, east of Missouri River.
- b. North Atlantic States.

2. Canada.

3. Europe.

C. Kinds of land to which settlers are invited—

1. Old farms—

- a. Entire.
- b. In small tracts.

2. New lands—

- a. Cut-over timberlands.
- b. Drained swamp lands.
- c. Irrigated lands.

D. Principal branches of farming suggested to prospective settlers—

- 1. Dairying.
- 2. General farming.
- 3. Poultry raising.
- 4. Production of orchard fruits.
- 5. Stock raising.
- 6. Sugar-beet growing.
- 7. Truck farming.

E. Cooperation of railroad companies with—

- 1. State immigration officials.
- 2. Local "boards of trade" and other "promotion" organizations.
- 3. Land companies and real-estate dealers.

III. Efforts to increase the production of farms:

A. By introducing more efficient methods—

1. Important topics treated—

- a. Alfalfa.
- b. Bacon.
- c. Corn.
- d. Cotton-boll weevil.

III. Efforts to increase the production of farms—Continued.

A. By introducing more efficient methods—Continued.

1. Important topics treated—Continued.

- e. Dairying.
- f. Diversified farming.
- g. Domestic economy.
- h. Dry farming.
- i. Gardening; production of vegetables for home use.
- j. General agriculture.
- k. Good roads.
- l. Grain.
- m. Insect pests.
- n. Marketing.
- o. Orchards.
- p. Packing for market.
- q. Plant diseases.
- r. Potatoes.
- s. Rotation of crops.
- t. Seed selection.
- u. Soil fertility.
- v. Stock raising.
- w. Truck farming.

2. Methods used in educational work—

a. Employment of experts to—

- (1) Take charge of development work in general.
- (2) Supervise demonstration farms.
- (3) Direct experiments on private farms.
- (4) Edit and publish literature.
- (5) Accompany instruction trains.
- (6) Attend public meetings.
- (7) Give advice in response to specific requests.
- (8) Assist in organizing farmers' associations.
- (9) Cooperate with Federal and State experts.
- (10) Help farmers to obtain laborers.
- (11) Investigate characteristics of soils.
- (12) Assist farmers in finding a market.

b. Instruction trains—

(1) In charge of—

- (a) Federal or State authorities.
- (b) Railroad experts in agriculture.

(2) Methods of instruction—

- (a) Lectures; from train or in public hall.
- (b) Exhibits of products and appliances.
- (c) Demonstrations of methods.
- (d) Distribution of literature.
- (e) Distribution of seed.

(3) Subjects of instruction. (See "Important topics treated," pp. 41-42.)

c. Demonstration or experimental farms—

(1) Purposes—

- (a) To test possibilities of certain regions.
- (b) To instruct new settlers.

III. Efforts to increase the production of farms—Continued.

A. By introducing more efficient methods—Continued.

2. Methods used in educational work—Continued.

c. Demonstration or experimental farms—Continued.

(2) Location of some railroad farms—

- (a) Delaware.
- (b) Maine.
- (c) Montana.
- (d) New York.
- (e) North Carolina.
- (f) Texas.
- (g) Virginia.

(3) Uses of products of railroad farms—

- (a) Exhibited at fairs.
- (b) Served on dining cars.
- (c) Sold.

d. Experimental plots on private farms—

(1) Purposes—

- (a) To introduce new methods.
- (b) To reach a large number of farmers.

(2) How managed—

- (a) Under direction of railroad official.
- (b) Work done by farmer.

(3) Terms of a typical agreement—

- (a) Railroad company—
 - Gives seed and fertilizer.
 - Loans certain implements.
- (b) Farmer receives—
 - Produce harvested.
 - Payment in money.

e. Encouragement of agricultural fairs—

- (1) Assistance in establishing a fair.
- (2) Exhibits secured.
- (3) Prizes offered—
 - (a) Money.
 - (b) High-grade animals for breeding.
- (4) Articles for exhibit at fairs transported free.

f. Organization of associations and cooperation with them—

- (1) Live-stock breeding.
- (2) Cooperative marketing.
- (3) Cooperative cow testing.
- (4) Alfalfa growing.
- (5) Cotton and corn growing (boys' and girls' clubs).

g. Securing students for agricultural colleges—

- (1) Scholarships, with free tuition, given by railroad.
- (2) Railroad station agents urged to attend short courses.
- (3) General effort to solicit students.

h. Issuing literature—

- (1) Subjects. (See "Important topics treated," pp. 41-42.)
- (2) Sources of information—
 - (a) Federal and State publications.
 - (b) Investigations of railroad experts.
 - (c) Miscellaneous investigators.

III. Efforts to increase the production of farms—Continued.

A. By introducing more efficient methods—Continued.

2. Methods used in educational work—Continued.

h. Issuing literature—Continued.

(3) How issued—

(a) As individual publications.

(b) As periodicals; quarterly or monthly.

(4) Size of some editions, as reported—

(a) One booklet, on potato culture, 40,000 copies.

(b) Nine booklets, on various farming topics, averaged 25,000 copies each.

(c) One periodical averaged each issue, 10,000 to 12,000 copies.

(d) One descriptive folder and map, 150,000 copies.

i. Distribution of seeds and plants—

(1) Pineapple seed given to new planters.

(2) Cowpea seed sold through station agents.

(3) Grapevines furnished to growers.

(4) Various seeds furnished to farmers for making experiments for railroad company.

j. Introduction of high-grade farm animals—

(1) As prizes—

(a) At agricultural fairs.

(b) In corn-growing contests.

(2) Through systems of public sales.

B. By giving aid other than educational—

1. Supply of farm labor—

a. Regular farm hands—

(1) Laborers secured through State officials.

(2) Farmers reached through railroad station agents.

b. Harvest hands, especially west of the Mississippi River.

2. Establishment of public markets—

a. Encouragement of truck-growing near a certain market.

b. Organization of systems of delivery and sale.

c. Erection of market houses (proposed).

3. Helping farmers obtain seed grain after a crop failure—

a. Sale of seed by railroad company for deferred payments.

b. Transportation of seed at low rates.

IV. Railroad projects that affect agriculture indirectly:

A. Forestry—

1. Purpose: Chiefly to provide supply of ties.

2. States in which railroad companies have planted forests—

a. Alabama.

b. California.

c. Florida.

d. Illinois.

e. Indiana.

f. Kansas.

g. Kentucky.

h. Louisiana.

i. Massachusetts.

IV. Railroad projects that effect agriculture indirectly—Continued.

A. Forestry—Continued.

2. States in which railroad companies have planted forests—Contd.
 - j. Michigan.
 - k. New York.
 - l. Pennsylvania.
 - m. Virginia.
3. Principal kinds of trees planted—
 - a. Catalpa.
 - b. Eucalyptus.
 - c. European larch.
 - d. Locust.
 - e. Norway spruce.
 - f. Pin oak.
 - g. Red oak.
 - h. Scotch pine.

B. Ornamental gardening—

1. General features—
 - a. Plots of grass, flowers, and shrubbery.
 - b. More extensive grounds—
 - (1) Grass, flowers, shrubbery, shade trees.
 - (2) Walks, drives, walls, terraces.
 - c. Embankments and cuts in and near terminals, ornamented with—
 - (1) Lawn grass.
 - (2) Vines.
 - d. Yards of section-men's houses—
 - (1) Trees, shrubs, and flower seeds furnished by company.
 - (2) Planted by section men or their families.
2. Purposes—
 - a. To give passengers (and others) a good impression of the railroad.
 - b. To help attract new settlers to a town.
3. Officials in charge of gardening—
 - a. Special officials—
 - (1) Landscape gardener for entire railroad.
 - (2) Gardeners for each division of the railroad.
 - b. Other railroad officials, as division superintendents.
 - c. Local town or city authorities; where railroad cooperates with town or city.

LIST OF RAILROADS.

An attempt has been made to secure as complete a list as practicable of all railroad companies engaged in special efforts to promote agriculture, in the year ending June 30, 1912. Through personal inquiry and correspondence, the following list has been compiled. A number of letters making inquiries as to agricultural promotion work were not answered, but in most of these cases it is believed that no agricultural promotion work was done by the railroad companies to which the letters were addressed.

List of railroads reported to be engaged in the year ending June 30, 1912, in special efforts to promote agriculture through such means as soliciting settlers for farm lands, employing agricultural experts, operating agricultural instruction trains, conducting demonstration farms, making experiments or demonstrations on private farms, helping to organize farmers' associations, or issuing agricultural literature.

Name of railroad.	Location of general offices, or office of agriculture or immigration department.
Alabama Great Southern.....	Chattanooga, Tenn.
Ann Harbor.....	Toledo, Ohio.
Atchison, Topeka & Santa Fe.....	Chicago, Ill.
Atlanta, Birmingham & Atlantic.....	Atlanta, Ga.
Atlantic Coast Line.....	Wilmington, N. C.
Au Sable & Northwestern.....	Au Sable, Mich.
Baltimore & Ohio.....	Baltimore, Md.
Baltimore & Ohio Southwestern.....	Do.
Baltimore, Chesapeake & Atlantic.....	Do.
Bangor & Aroostook.....	Bangor, Me.
Bellingham Bay & British Columbia.....	Bellingham, Wash.
Bessemer & Lake Erie.....	Pittsburgh, Pa.
Boston & Albany.....	Boston, Mass.
Boston & Maine.....	Do.
Boyne City, Gaylord & Alpena.....	Boyne City, Mich.
Buffalo, Rochester & Pittsburgh.....	Rochester, N. Y.
Carolina & Northwestern.....	Chester, S. C.
Carolina, Clinchfield & Ohio.....	Johnson City, Tenn.
Central New England.....	Boston, Mass.
Central of Georgia.....	Savannah, Ga.
Central Vermont.....	St. Albans, Vt.
Charlotte Harbor & Northern.....	Arcadia, Fla.
Chesapeake & Ohio.....	Richmond, Va.
Chicago & North Western.....	Chicago, Ill.
Chicago, Burlington & Quincy.....	Do.
Chicago Great Western.....	Do.
Chicago, Indiana & Southern.....	Do.
Chicago, Milwaukee & Puget Sound.....	Seattle, Wash.
Chicago, Milwaukee & St. Paul.....	Chicago, Ill.
Chicago, Rock Island & Pacific.....	Do.
Cincinnati, Lebanon & Northern.....	Pittsburgh, Pa.
Cincinnati, New Orleans & Texas Pacific.....	Chattanooga, Tenn.
Cleveland, Cincinnati, Chicago & St. Louis.....	Cincinnati, Ohio.
Colorado & Southern.....	Denver, Colo.
Copper Range.....	Houghton, Mich.
Cumberland Valley.....	Chambersburg, Pa.
Delaware & Hudson.....	Albany, N. Y.
Delaware, Lackawanna & Western.....	New York, N. Y.
Denver & Rio Grande.....	Denver, Colo.
Denver, Northwestern & Pacific.....	Do.
Detroit & Charlevoix.....	Detroit, Mich.
Detroit & Mackinac.....	Bay City, Mich.
Duluth & Iron Range.....	Duluth, Minn.
Dunkirk, Allegheny Valley & Pittsburgh.....	New York, N. Y.
El Paso & Southwestern.....	Chicago, Ill.
Erie.....	New York, N. Y.
Florida East Coast.....	St. Augustine, Fla.
Fort Smith & Western.....	Fort Smith, Ark.
Fort Worth & Denver City.....	Fort Worth, Tex.
Galveston, Harrisburg & San Antonio.....	Houston, Tex.
Georgia.....	Augusta, Ga.
Georgia & Florida.....	Do.
Georgia Coast & Piedmont.....	Darien, Ga.
Georgia, Florida & Alabama.....	Bainbridge, Ga.
Georgia Southern & Florida.....	Washington, D. C.
Grand Rapids & Indiana.....	Grand Rapids, Mich.
Great Northern.....	St. Paul, Minn.
Gulf & Ship Island.....	Gulfport, Miss.
Harriman & Northeastern.....	Chattanooga, Tenn.
Hocking Valley.....	Columbus, Ohio.
Houston East & West Texas.....	Houston, Tex.
Houston & Shreveport.....	Do.
Houston & Texas Central.....	Do.
Idaho & Washington Northern.....	Spokane, Wash.
Idaho Northern.....	Portland, Oreg.
Illinois Central.....	Chicago, Ill.
International & Great Northern.....	St. Louis, Mo.
Iowa Central.....	Minneapolis, Minn.
Kanawha & Michigan.....	Charleston, W. Va.
Kansas City, Clinton & Springfield.....	Springfield, Mo.
Kansas City, Mexico & Orient.....	Kansas City, Mo.
Kansas City Southern.....	Do.
Lake Erie & Western.....	Cleveland, Ohio.
Lake Shore & Michigan Southern.....	Chicago, Ill.
Laramie, Hahns Peak & Pacific.....	Laramie, Wyo.

List of railroads reported to be engaged in the year ending June 30, 1912, in special efforts to promote agriculture—Continued.

Name of railroad.	Location of general offices, or office of agriculture or immigration department.
Lehigh Valley.....	New York, N. Y.
Live Oak, Perry & Gulf.....	Live Oak, Fla.
Long Island.....	Medford Station, N. Y.
Louisiana & Arkansas.....	Texarkana, Ark.
Louisiana Railway & Navigation Co.....	New Orleans, La.
Louisville & Nashville.....	Louisville, Ky.
Louisville, Henderson & St. Louis.....	Do.
Macon, Dublin & Savannah.....	Macon, Ga.
Maine Central.....	Boston, Mass.
Manistee & Grand Rapids.....	Manistee, Mich.
Manistee & Northeastern.....	Do.
Marshall & East Texas.....	Marshall, Tex.
Maryland, Delaware & Virginia.....	Baltimore, Md.
Memphis, Dallas & Gulf.....	Nashville, Ark.
Michigan Central.....	Detroit, Mich.
Midland Valley.....	Muskogee, Okla.
Minneapolis & St. Louis.....	Minneapolis, Minn.
Minneapolis, St. Paul & Sault Ste. Marie.....	Do.
Mississippi Central.....	Hattiesburg, Miss.
Missouri & North Arkansas.....	Eureka Springs, Ark.
Missouri, Kansas & Texas.....	St. Louis, Mo.
Missouri, Oklahoma & Gulf.....	Muskogee, Okla.
Missouri Pacific.....	St. Louis, Mo.
Mobile & Ohio.....	Washington, D. C.
Morgan's Louisiana & Texas Railway & Steamship Co.....	New Orleans, La.
Nashville, Chattanooga & St. Louis.....	Nashville, Tenn.
New Orleans Great Northern.....	New Orleans, La.
New Orleans, Mobile & Chicago.....	Laurel, Miss.
New York, Baltimore & Washington.....	Philadelphia, Pa.
New York Central & Hudson River.....	New York, N. Y.
New York, New Haven & Hartford.....	Boston, Mass.
New York, Ontario & Western.....	New York, N. Y.
New York, Philadelphia & Norfolk.....	Philadelphia, Pa.
Norfolk & Western.....	Roanoke, Va.
Norfolk Southern.....	Norfolk, Va.
Northern Alabama.....	Washington, D. C.
Northern Central.....	Philadelphia, Pa.
Northern Pacific.....	St. Paul, Minn.
Northwestern Pacific.....	San Francisco, Cal.
Oregon Short Line.....	Omaha, Nebr.
Oregon Trunk.....	Portland, Oreg.
Oregon-Washington Railroad & Navigation Co.....	Do.
Pacific & Idaho Northern.....	New Meadows, Idaho.
Payette Valley.....	Payette, Idaho.
Pennsylvania Co.....	Pittsburgh, Pa.
Pennsylvania Railroad Co.....	Philadelphia, Pa.
Pere Marquette.....	Detroit, Mich.
Pittsburgh, Cincinnati, Chicago & St. Louis.....	Pittsburgh, Pa.
Raquette Lake.....	New York, N. Y.
Richmond, Fredericksburg & Potomac.....	Richmond, Va.
Rutland.....	Rutland, Vt.
St. Lawrence & Adirondack.....	New York, N. Y.
St. Louis & San Francisco.....	St. Louis, Mo.
St. Louis, El Reno & Western.....	Fort Smith, Ark.
St. Louis, Iron Mountain & Southern.....	St. Louis, Mo.
St. Louis Southwestern.....	Do.
San Antonio & Aransas Pass.....	San Antonio, Tex.
San Pedro, Los Angeles & Salt Lake.....	Los Angeles, Cal.
Seaboard Air Line.....	Norfolk, Va.
Spokane & Inland Empire.....	Spokane, Wash.
Spokane, Portland & Seattle.....	Portland, Oreg.
Southern.....	Washington, D. C.
Southern Pacific Co.....	San Francisco, Cal.
Susquehanna & New York.....	Williamsport, Pa.
Texas & New Orleans.....	Houston, Tex.
Texas & Pacific.....	St. Louis, Mo.
Texas Central.....	Waco, Tex.
Vandalia.....	St. Louis, Mo.
Union Pacific.....	Omaha, Nebr.
Wabash.....	St. Louis, Mo.
Washington Southern.....	Richmond, Va.
West Shore.....	New York, N. Y.
Western Pacific.....	San Francisco, Cal.
Wichita Valley.....	Fort Worth, Tex.
Winston-Salem Southbound.....	Winston-Salem, N. C.
Wrightsville & Tennille.....	Wrightsville, Ga.
Yazoo & Mississippi Valley.....	Chicago, Ill.

